MEMORANDUM State of Alaska

TO: Dave Barto
Fishery Biologist
Division of F.R.E.D.
Sitka

DATE: February 12, 1986

FILE NO:

TELEPHONE NO:

FROM: Art Schmidt
Fishery Biologist
Division of Sport Fish
Department of Fish and Game
Sitka

SUBJECT: Chinook Stocking of Redoubt Lake

After reviewing your project proposal for stocking chinook fry into Redoubt Lake I would like to offer a few observations.

I don't know what the species composition of zooplankton is now. You will have to provide this information for a serious evaluation. When I worked on the lake in 1974, the cladocera Bosmina was the most abundant "large" zooplankton. There were few cyclopoid copepods and no calenoid copepods. Unless this species composition has changed and larger copepods are more abundant, I doubt if the rearing chinook would feed heavily on the available zooplankton. Jeff Hardt (pers. comm. 1986) has found that rearing chinook feed extensively on zooplankton 1.5 mm in length or larger. Other researchers have set these size limits at 1.3 and 1.4 mm. When the plankton size falls below this size range, active feeding on zooplankton is greatly reduced. The larger high contrast organisms such as Chaoborus and large Diaptomus are preferred. How many of these do you find in your plankton samples? What is the size range of your Bosmina?

When only smaller zooplankton are present, the chinook tend to prefer larger benthic organisms which may not be very abundant in the majority of Redoubt Lake.

Coho will selectively feed on smaller zooplankton than do chinook.

Paul Kissner (pers. comm. 1986) indicates that in all of his research in Southeast Alaska rivers rearing coho are better competitors than chinook for preferred rearing habitat. We know that Redoubt has a substantial return of adult coho. Several thousand coho return to Redoubt each year. The available stream rearing area is likely already at density capacity.

How intelligent is the policy of introducing chinook into a known sockeye population which has a record of IHN. If this is accepted procedure, why don't we raise chinook at Klawock? I am no pathologist but would question this as sound genetic policy.

The idea that chinook already exist in Redoubt has little basis. How many chinook have passed the weir? There may be a very limited number of chinook produced from the system, but I would like to know where they are rearing. Has anyone trapped them in the inlet stream? I have personally seen one chinook below the falls at the outlet, but none of my investigations captured any rearing chinook.

If the fertilization experiment and stocking experiments are to continue we should have the technology to reliably enumerate smolt numbers from the system. How many sockeye smolt and coho smolt are now emigrating from Redoubt Lake on an annual basis?

I really doubt if planting chinook in Redoubt will have too serious a negative effect on the other rearing species, although they will compete with coho. This competition may be more serious that I expect.

I would need to see your data on available food supply (larger zooplankton) and unutilized available rearing area for chinook before I can believe that planting chinook fry will produce any benefit. I would not be the one to recommend this proposal as a biologically sound project.

cc Frank Van Hulle
Paul Kissner
Jeff Hardt
Jeff Koenings
Mike Haddix